

AUXILIARY BRAKE CONTROL SYSTEM

DT01 Rec'd PCT/PT 21 OCT 2004

CLAIMS

- 5 **1.** An auxiliary brake control system for a vehicle having wheel brakes, and
a brake pedal in an operator's compartment of said vehicle, controllable
by a vehicle operator, said brake pedal being secured to a brake arm
pivotally attached to a frame member in the operator's compartment
and being positioned above a floor section of such vehicle, said auxiliary
10 brake control system comprising: an auxiliary brake actuator
positionable in a passenger compartment of such vehicle, said auxiliary
brake actuator including a base member and an auxiliary pedal member
pivotally attached to said base member; a cable member including an
outer sheath portion and an inner cable portion within said outer sheath
15 portion; first means connecting a distal end of said outer sheath portion
to said base member; second means locating the opposite, proximal,
end of said outer sheath portion at said brake arm; third means
connecting a distal end of said inner cable portion to said auxiliary pedal
member; and fourth means connecting the opposite, proximal, end of
20 said inner cable portion to said floor section of said vehicle; at least a
section of said cable member being unconstrained between said first and
second means; whereby when a passenger applies force on said
auxiliary pedal member said outer sheath portion of said cable member
will move relative to said inner cable portion such that said second
25 means will act on said brake arm to apply said vehicle wheel brakes.

2. The auxiliary brake control system according to claim 1 wherein said cable member is a Bowden cable with said inner cable portion being a flexible metallic cable and said outer sheath portion being a braided flexible metallic sheath, said inner cable portion extending beyond said outer sheath portion at each end thereof.
3. The auxiliary brake control system according to claim 2 wherein: said base member is adapted to sit on a floor section of said passenger compartment; a support section extends upwardly from said base member adjacent one end thereof; and a pivot means connects said auxiliary pedal member intermediate first and second ends thereof to said support section above said base member.
4. The auxiliary brake control system according to claim 3 wherein: said first end of said auxiliary pedal member includes a pad on which the passenger can apply force to operate said auxiliary brake control system; and said third means is adapted to connect said distal end of said inner cable portion to said second end of said auxiliary pedal member.
5. The auxiliary brake control system according to claim 4 wherein: said first means is adapted to connect said distal end of said outer sheath portion to said support section below said pivot means such that said inner cable portion can extend through said support section for connection to said second end of said auxiliary pedal member.
6. The auxiliary brake control system according to claim 2 wherein: said second means comprises a mounting bracket securable to said brake arm and connection means adapted to position said proximal end of said outer sheath portion at said mounting bracket.

7. The auxiliary brake control system according to claim 6 wherein: said fourth means comprises a connection member removably securable to said floor section of said operator's compartment below said brake arm; and second connection means adapted to connect said proximal end of said inner cable portion to said connection member.
8. The auxiliary brake control system according to claim 1 including adjustment means intermediate the ends of said outer sheath portion for adjusting the length of said outer sheath portion and thereby adjusting the initial location of the proximal end of said outer sheath portion with respect to the proximal end of said inner cable portion.
9. The auxiliary brake control system according to claim 8 wherein said outer sheath portion includes first and second sections, said first means being at said distal end of said first section and said second means being at said proximal end of said second section, said adjustment means being threadedly connected to the proximal end of said first section and to the distal end of said second section whereby movement of said adjustment means in one direction will bring said distal end of said first section closer to said proximal end of said second section so as to effectively shorten said outer sheath portion, and movement of said adjustment means in an opposite direction will move said distal end of said first section away from said proximal end of said second section so as to effectively lengthen said outer sheath portion.
10. The auxiliary brake control system of claim 5 wherein said support section includes upstanding side and front walls, and said first means comprises: at least one aperture extending through said front wall, sized to pass said distal end of said inner cable portion therethrough; a circumferential flange adjacent said distal end of said outer sheath portion for abutment against a front surface of said front wall at said

aperture, a cylindrical portion of said outer sheath portion passing through said aperture; and a pair of lugs extending radially from said cylindrical portion, engagable with a rear surface of said front wall for securing said distal end of said outer sheath portion to said front wall.

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11. The auxiliary brake control system of claim 10 wherein said third means comprises: a connector secured to the second end of said auxiliary pedal member, said connector having at least one pair of lugs having a transverse aperture therethrough, with a open slot extending from said transverse aperture on at least one of said lugs to the free end thereof; and a connection pin secured transversely to the distal end of said inner cable portion, said pin being receivable in said transverse aperture by passing said distal end of said inner cable portion through said open slot for connecting said distal end of said inner cable portion to said auxiliary pedal member.

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12. The auxiliary brake control system of claim 6 wherein said mounting bracket has a generally inverted U-shape for fitment over said brake arm, one leg of said mounting bracket being adapted to receive at least one threaded thumbscrew for clamping said mounting bracket to said brake arm, the other leg of said mounting bracket including a laterally extending flange having an aperture therethrough and a hollow cylindrical tube member extending upwardly from said flange, said proximal end of said outer sheath portion being receivable within said hollow cylindrical tube member, and said proximal end of said inner cable portion extending through said aperture in said flange.

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13. The auxiliary brake control system of claim 7 wherein said second means comprises: a generally flat bar member having a longitudinally extending slot therethrough and also having an open ended slot at one end thereof defined by a pair of spaced apart arm portions; a pair of posts for

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supporting said bar member above said floor section below said brake arm; a threaded nut on the proximal end of said inner cable portion spaced from the free end thereof; and a threaded stud having a central bore therethrough for threaded reception of said free end, said threaded stud extending through said longitudinally extending slot for threaded engagement with said threaded nut to secure said proximal end of said inner cable portion to said bar member.

14. The auxiliary brake control system of claim 13 wherein one of said posts has a threaded bore extending inwardly from a top surface therethrough and the other of said posts has a circumferential groove in a shank portion thereof, said groove being adapted for sliding reception of said spaced apart arm portions and said threaded bore being adapted for threaded reception of threaded fastening means extending through said longitudinally extending slot.

15. The auxiliary brake control system of claim 14 wherein said arm portions are deflected upwardly relative to the remainder of said bar member.

16. The auxiliary brake control system of claim 15 including a compression spring surrounding the proximal end of said inner cable portion between said bar member and said mounting bracket.

17. The auxiliary brake control system of claim 3 including a torsion spring surrounding said pivot means connecting said auxiliary pedal member to said support section, with one end of said torsion spring abutting said auxiliary pedal member and the other end of said torsion spring abutting said support section, said torsion spring serving to aid in returning said auxiliary pedal member to the unactuated state thereof following operation thereof.

18. An auxiliary brake control system for a vehicle having wheel brakes, and a brake pedal in an operator's compartment of said vehicle, controllable by a vehicle operator, said brake pedal being secured to a brake arm pivotally attached to a frame member in an operator's compartment of the vehicle and being positioned above a floor section of such vehicle, said auxiliary brake control system comprising: an auxiliary brake actuator positionable in a passenger compartment of such vehicle, said actuator including a base member, a support structure secured to said base member and an auxiliary pedal member pivotally attached intermediate the ends thereof to said support structure above said base member; a cable member including an outer sheath portion and an inner cable portion within said outer sheath portion; first means connecting a distal end of said outer sheath portion to said support structure below said auxiliary pedal member: second means locating the opposite, proximal, end of said outer sheath portion at a mounting member adapted for removable attachment to said brake arm; third means connecting a distal end of said inner cable portion to one end of said auxiliary pedal member; and fourth means connecting the opposite, proximal, end of said inner cable portion to a connection member adapted for removable attachment to said floor section of said vehicle below said mounting bracket; at least a section of said cable member being unconstrained between said first and second connecting means; whereby when a driving instructor applies force on the other end of said auxiliary pedal member said outer sheath portion of said cable member will move relative to said inner cable portion such that said second means will act on said mounting member and thus on said brake arm to depress said brake pedal sufficiently to apply said vehicle wheel brakes.
19. The auxiliary brake control system according to claim 18 wherein said outer sheath portion includes first and second sections, said first means being at said distal end of said first section and said second means being

at said proximal end of said second section, and including an adjustment member being threadedly connected to the proximal end of said first section and to the distal end of said second section whereby rotational movement of said adjustment means in one direction will bring said distal end of said first section closer to said proximal end of said second section so as to effectively shorten said outer sheath portion, and rotational movement of said adjustment member in the opposite direction will move said distal end of said first section away from said proximal end of said second section so as to effectively lengthen said outer sheath portion.

20. The auxiliary brake control system according to claim 19 wherein each of said distal and proximal ends of said first and second sections is provided with a threaded extension, one of said threaded extensions having a right-hand thread and the other of said extensions having a left-hand thread, said adjustment member having threaded sections for threaded engagement with said threaded extensions.

21. An auxiliary brake control system for a vehicle having wheel brakes, and a brake pedal in an operator's compartment of said vehicle, controllable by a vehicle operator, said brake pedal being secured to a brake arm pivotally attached to a frame member in an operator's compartment of the vehicle and being positioned above a floor section of such vehicle, said auxiliary brake control system comprising:

an auxiliary brake actuator arbitrarily positionable in a passenger compartment of such vehicle, said actuator including a base member and an auxiliary pedal member pivotally attached to said base member;

an elongated flexible cable member including an outer sheath portion and an inner cable portion within said sheath portion;

first means connecting a distal end of said outer sheath portion to one of said base member and said auxiliary pedal member:

second means connecting the opposite, proximal, end of said outer sheath portion to one of said brake arm and said floor section of said vehicle;

third means connecting a distal end of said inner cable portion, extending beyond said distal end of said outer sheath portion, to the other of said base member and said auxiliary pedal member; and

fourth means connecting the opposite, proximal, end of said inner cable portion, extending beyond said proximal end of said outer sheath portion, to the other of said brake arm and said floor section of said vehicle;

at least a section of said cable member being unconstrained between said distal and proximal ends of said outer sheath portion;

whereby when a passenger applies force on said auxiliary pedal member said outer sheath portion of said cable member will move relative to said inner cable portion to effectively reduce the distance that said proximal end of said inner cable portion extends beyond said proximal end of said outer sheath portion, thereby causing said brake arm to move sufficiently to cause said servo system to apply said vehicle wheel brake.